Compaq ProLiant BL20p Server Blade

Setup and Installation Guide

Part Number 307131-001

September 2002 (First Edition)

Use this document to understand the Compaq ProLiant BL20p server blade capabilities, to identify system components and their functionality, to install and configure standard and optional hardware, and to troubleshoot the initial installation.

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About This Guide

This guide provides step-by-step instructions for installation and reference information for operation, troubleshooting, and future upgrades for the Compaq ProLiant BL20p server blade.

Intended Audience

This guide is intended for network administrators and IT personnel who install, configure, and troubleshoot system hardware and software. Of all the documents that ship with the system, this document provides the most comprehensive system information and hardware procedures.

⚠ Important Safety Information

Before installing this product, read the *Important Safety Information* document provided.

The installation and maintenance of this equipment may involve access to high power circuitry and must be performed by trained service personnel familiar with these conditions. This equipment is intended to be installed in restricted access areas, such as equipment closets and data centers, where only trained service personnel are permitted to operate and service the equipment.

Symbols on Equipment

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions:

WARNING: This symbol, in conjunction with any of the following symbols, indicates the presence of a potential hazard. The potential for injury exists if warnings are not observed. Consult the documentation for specific details.

This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.

This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.

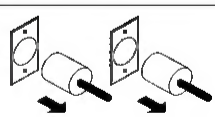
WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.

This symbol on an RJ-45 receptacle indicates a network interface connection.

WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching it.



These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.

Weight in kg
Weight in lb

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Text Conventions

This document uses the following conventions:

- *Italic type* is used for complete titles of published guides or variables. Variables include information that varies in system output, in command lines, and in command parameters in text.
- **Bold type** is used for emphasis, for onscreen interface components (window titles, menu names and selections, button and icon names, and so on), and for keyboard keys.

- `Monospace typeface` is used for command lines, code examples, screen displays, error messages, and user input.
- Sans serif typeface is used for uniform resource locators (URLs).

Related Documents

For additional information on the topics covered in this guide, refer to the following documentation on the Compaq website or Documentation CD:

- *Compaq ProLiant BL p-Class System Setup and Installation Guide*
- *Compaq ProLiant BL p-Class System Maintenance and Service Guide*
- *Compaq ProLiant BL p-Class System Hardware Installation and Configuration Poster*
- *Compaq Servers Troubleshooting Guide*
- *Compaq Integrated Lights-Out User Guide*
- *Compaq ROM-Based Setup Utility User Guide*
- White paper: *Compaq ProLiant BL p-Class System Overview and Planning*
- White paper: *Configuring a Preboot Execution Environment (PXE) using Red Hat Linux 7.2 on Compaq ProLiant Servers*
- QuickSpecs

Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

Compaq Technical Support

In North America, call the Compaq Technical Support Phone Center at 1-800-OK-COMPAQ. This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored. Outside North America, call the nearest Compaq Technical Support Phone Center. Telephone numbers for worldwide Technical Support Centers are listed on

www.compaq.com

Before calling, refer to the *Compaq Servers Troubleshooting Guide* on the Documentation CD for a list of information to have available.

Compaq Website

The Compaq website has information on this product as well as the latest drivers and flash ROM images. You can access the Compaq website at

www.compaq.com

Compaq Authorized Reseller

For the name of the nearest Compaq authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the Compaq website for locations and telephone numbers.

Reader's Comments

Compaq welcomes your comments on this guide. Please send your comments and suggestions by email to `ServerDocumentation@compaq.com`.

1

Server Blade Features

Refer to Compaq QuickSpecs for a comprehensive listing of Compaq *ProLiant*™ BL20p server blade features. Key features are highlighted below.

Integrated Lights-Out Management

The server blade ships with advanced Compaq Integrated Lights-Out (iLO) tecbnology. Features include:

- Server health monitoring
- Remote server manageability
  - — Remotely access the console of the host server, including all text mode and graphics mode screens, regardless of the state of the host operating system or host server
  - — Remotely power up, power down, or reboot the host server
  - — Remotely boot a host server from a virtual diskette image
- Remote keyboard, mouse, and video (text and graphics) capability for servers
- Virtual diskette capability
- Alerts and advanced troubleshooting features
- Access from a network client with a supported Web browser

Smart Array 5i Controller Module

Smart Array 5i Controller features include:

- 32 MB total memory for code, transfer buffers, and read cache
- Optional Battery-Backed Write Cache Enabler to prevent data loss during power interruptions
- Support for up to two internal Wide Ultra3 SCSI hot-plug hard drives in RAID 0 and RAID 1
- Configurable with easy-to-use Array Configuration Utility (ACU)
- Option ROM Configuration for Arrays (ORCA)
- Performance monitoring, Pre-Failure Notification, and Pre-Failure Warranty through the *Compaq Insight Manager™* 7 application

Compaq NC3163 NIC Module

Standard NIC support includes:

- Three Compaq NC3163 Fast Ethernet NICs Embedded 10/100 WOL
- Auto-sensing LAN capable at either 10 or 100 Mb/s
- Full-duplex Ethernet for two-way transmission
- Support for the Intel PXE
- Support for data transfer and iLO management
- Connector compatibility for optional Dual NC7780 Gigabit upgrade module, providing two embedded 10/1000-Mb and one 10/100-Mb NICs

LEDs

The system contains several sets of LEDs that indicate the status of hardware components and settings. For a detailed explanation of LEDs, refer to Appendix E, "LEDs and Switches."

Pre-Failure Warranty

The server blade includes a Pre-Failure Warranty for processors, hard drives, and memory modules purchased from Compaq through Compaq authorized resellers. Under the terms of its warranty, supported components are eligible for replacement before they actually fail provided you use Compaq Insight Manager 7 and that the system determines that the supported components have degraded below predetermined reliability thresholds within the product warranty period.

When Compaq Insight Manager 7 alerts you that a component may be eligible for Pre-Failure Warranty replacement, follow the on-screen instructions or contact a Compaq authorized service provider in your area. A yellow status indicator on the Compaq Insight Manager 7 control panel signals that a component is in a degraded condition and prompts you to replace the component in its pre-failure condition.

Security Features

Security features for tbe system include:

- Power-on password
- Administrator password
- Network server mode
- Configuration lock
- NVRAM write protect

Standard security features are configured through Compaq ROM-Based Setup Utility (RBSU). To access these settings, refer to Chapter 3, "Configuring and Deploying Server Blades."

For more information about server blade security features, refer to the documentation that ships with the system.

2

Installing the Server Blade and Options

This chapter provides installation procedures for ProLiant BL20p server blades and memory. For additional installation information, refer to the following documents:

- Labels attached to the server blade access panel
- Documentation that ships with each option kit

To streamline the installation process, read the installation instructions for all the hardware options before installing the hardware.

If you encounter any problems during installation, contact a Compaq authorized reseller.

WARNING: To reduce the risk of personal injury or damage to equipment, heed all warnings and cautions throughout the installation instructions.

IMPORTANT: Before installing server blades for the first time, define the hardware configuration and server blade deployment process. Refer to Chapter 3, "Configuring and Deploying Server Blades."

Preparation Procedures

To install server blade options, you may need to complete the following procedures:

- Access internal server blade components
  - — Power down the server blade
  - — Remove the server blade from the server blade enclosure
  - — Remove the access panel
- Identify the system board components
- Install server blade options
- Reinstall the access panel

Accessing Internal Server Blade Components

To access internal server blade components, you must remove the access panel. Observe the following warnings and cautions.

WARNING: To reduce the risk of electric shock, do not operate the server blade without the access panel.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching them.

CAUTION: Electrostatic discharge can damage electronic components. Properly ground yourself before beginning any installation procedure. Refer to Appendix B, "Electrostatic Discharge," for more information.

To access internal server blade components:

IMPORTANT: If the server blade is not installed in the server blade enclosure, begin with step 4.

1. Identify the proper server blade in the server blade enclosure.
2. Remove power from the server blade in one of the following ways:
   - Use the virtual power button feature in the iLO remote console to power down the server blade from a remote location. Be sure that the server blade is in standby mode by observing that the power LED is amber. For iLO information and procedures, refer to the *Compaq Integrated Lights-Out User Guide*.
   - Press the Power On/Standby button on the front of the server blade. Be sure that the server blade is in standby mode by observing that the power LED is amber.

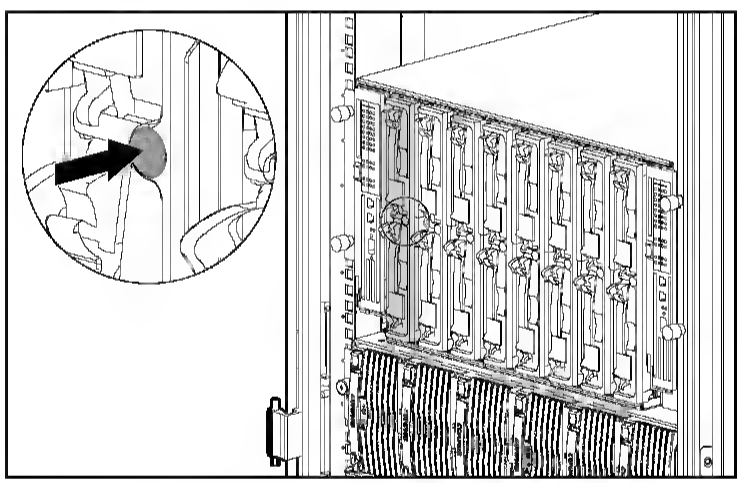


Figure 2-1: Pressing the Power On/Standby button

CAUTION: After you press the release button, the server blade is unlocked from the enclosure. Use both hands to support the server blade when you remove it from the rack.

3. Remove the server blade from the server blade enclosure:
   a. Press the release button (1).
   b. Open the release lever (2).
   c. Grasp the lever and slide the server blade from the enclosure (3). Place a hand under the server blade to support it as you remove it from the rack.

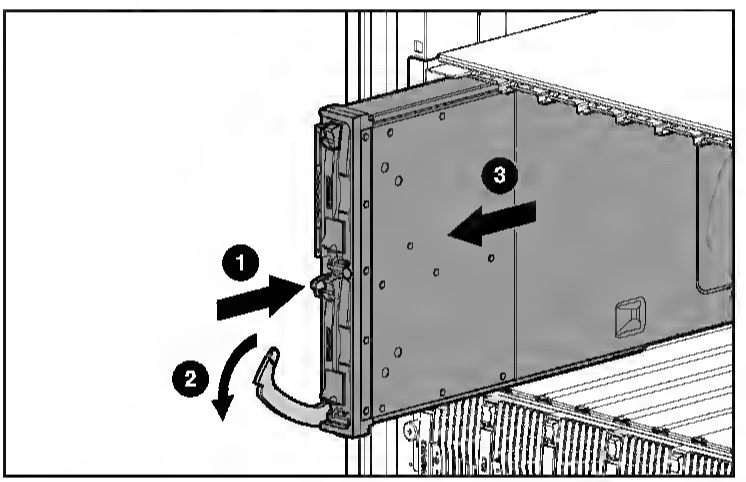


Figure 2-2: Removing the server blade from the server blade enclosure

4. Place the server blade on a flat, level surface.
5. Remove the access panel:
   a. Loosen the thumbscrew on the rear of the server blade (1).
   b. Slide the access panel about 1 cm (3/8 inch) toward the rear of the unit and lift the panel to remove it (2).

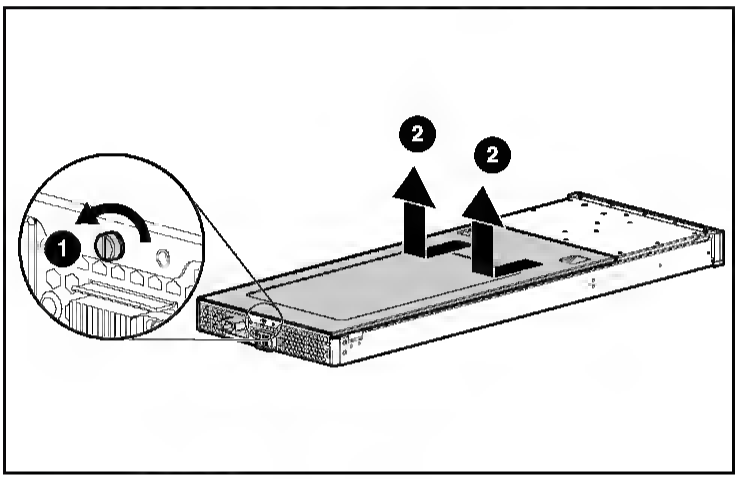


Figure 2-3: Removing the access panel

Identifying System Board Components

Use Figure 2-4 and Table 2-1 to identify the system board components and connectors.

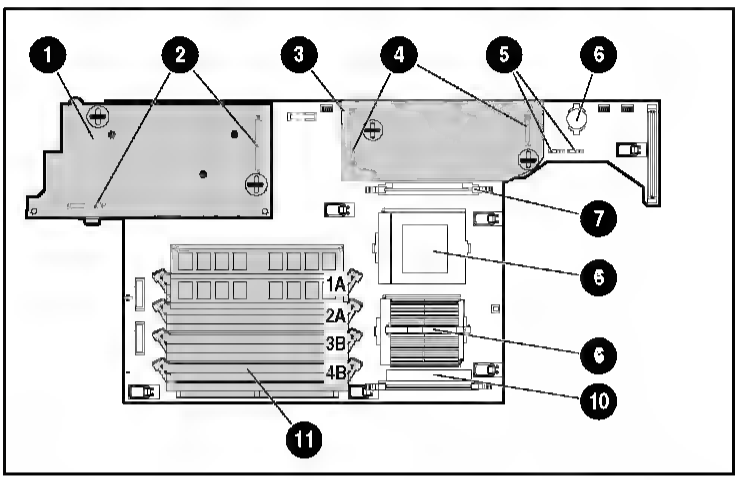


Figure 2-4: System board components and connectors

Table 2-1: System Board Components and Connectors

Item	Description
1	NIC module
2	NIC module connectors
3	Smart Array 5i Controller module
4	Smart Array 5i connectors
5	Blower assembly connectors
6	Battery
7	Processor power module (PPM) slot 2
8	Processor socket 2
9	Processor socket 1 (populated)
10	PPM slot 1 (populated)
11	DIMM slots 1A through 4B

Installing the Access Panel

After installing all the options, reinstall the access panel:

1. Set the access panel on top of the server blade. Allow the panel to extend past the rear of the server blade approximately 1 cm (3/8 inch).
2. Slide the access panel forward until it fits into place (1).
3. Tighten the thumbscrew on the rear of the server blade (2).

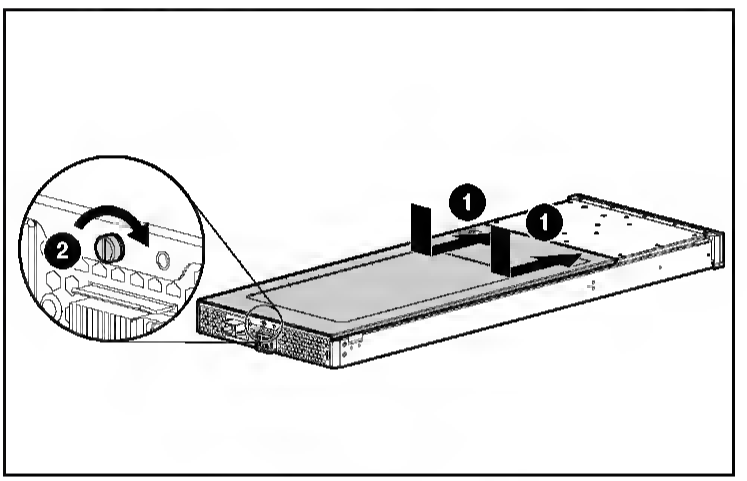


Figure 2-5: Installing the access panel

Memory

You can expand system memory by installing Compaq synchronous DRAM (SDRAM) DIMMs. A ProLiant BL20p server blade supports up to four 1-GB, 133-MHz, ECC, registered SDRAM DIMMs.

Identifying DIMM Slots

Use Figure 2-6 and Table 2-2 to identify DIMM slot locations. The slots are numbered sequentially (1 through 4), and the paired banks are identified by the letters A and B.

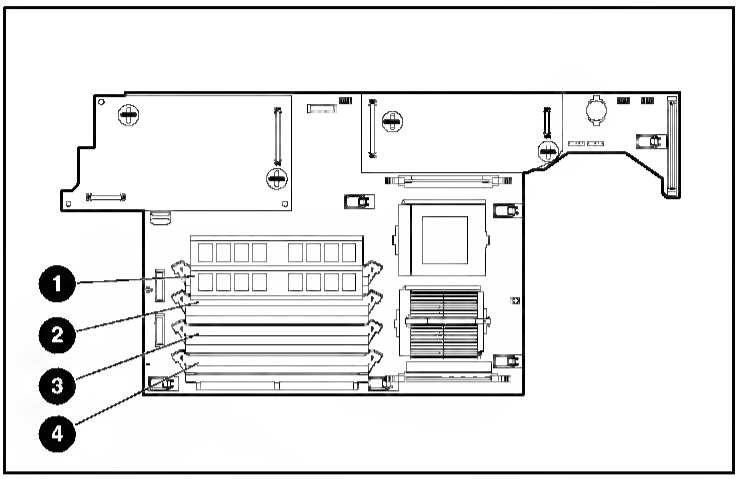


Figure 2-6: DIMM slots

Table 2-2: DIMM Slots

Item	Description
1	DIMM slot 1A (populated)
2	DIMM slot 2A (populated)
3	DIMM slot 3B
4	DIMM slot 4B

DIMM Installation Guidelines

You must observe the following guidelines when installing additional memory:

- Install only 133-MHz registered SDRAM, 3.3-V, 72-bit wide, ECC DIMMs in the server blade.
- Install identical DIMMs as pairs only.

  IMPORTANT: Install identical DIMMs in slots 1A *and* 2A. You can install *a* second set of identical DIMMs in slots 3B *and* 4B.

- Populate both slots in a bank at the same time.

NOTE: The server blade ships with at least two DIMMs installed in DIMM slots 1A and 2A.

- Install the DIMMs in the paired banks in sequential order.

CAUTION: Use only Compaq DIMMs. DIMMs from other sources are known to adversely affect data integrity.

Installing DIMMs

Before installing DIMMs, review the "DIMM Installation Guidelines" section in this chapter.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching them.

CAUTION: Electrostatic discharge can damage electronic components. Properly ground yourself before beginning any installation procedure. Refer to Appendix B, "Electrostatic Discharge," for more information.

To install a DIMM:

1. Access the internal server blade components. Refer to the "Preparation Procedures" section in this chapter.
2. Open the DIMM slot latches.
3. Align the key slot in the bottom edge of the DIMM with the tab in the DIMM slot.

   IMPORTANT: DIMMs do not seat if turned the wrong way.

4. Insert the DIMM into the DIMM slot (1).
5. Press down firmly. When the DIMM seats fully in the slot, the latches close (2).

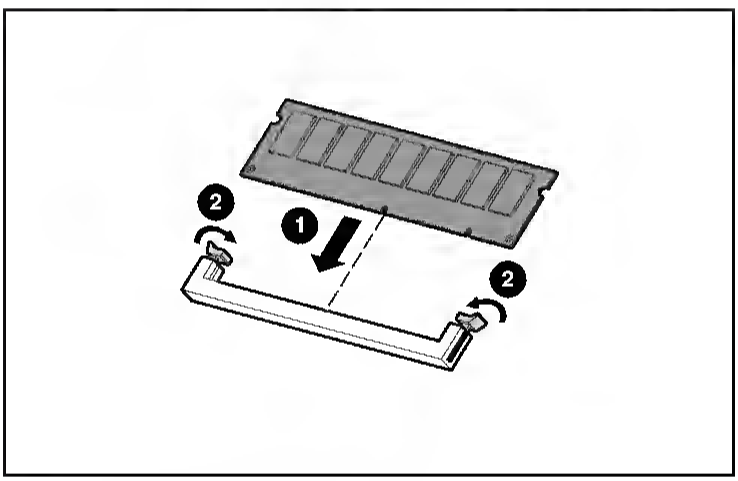


Figure 2-7: Installing a DIMM

6. Reinstall the access panel. Refer to the "Installing the Access Panel" section in this chapter.

Battery-Backed Write Cache Enabler

The Battery-Backed Write Cache Enabler provides the system with a means for storing and saving data in the event of an unexpected system shutdown.

To install the Battery-Backed Write Cache Enabler:

1. Access the internal server blade components. Refer to the "Preparation Procedures" section in this chapter.
2. Install the Battery-Backed Write Cache Enabler on the brass standoffs on the NIC module. Be sure the enabler seats firmly.

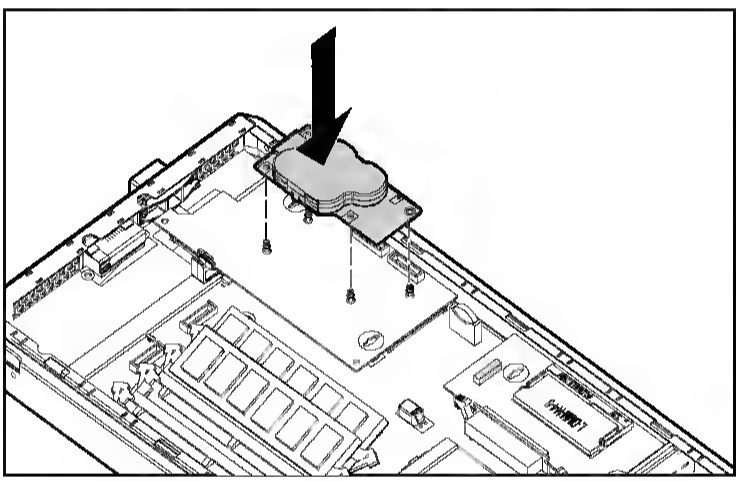


Figure 2-8: Installing the Battery-Backed Write Cache Enabler

3. Connect the cable to the Battery-Backed Write Cache Enabler (1).
4. Connect the cable to the Smart Array 5i Controller module (2).

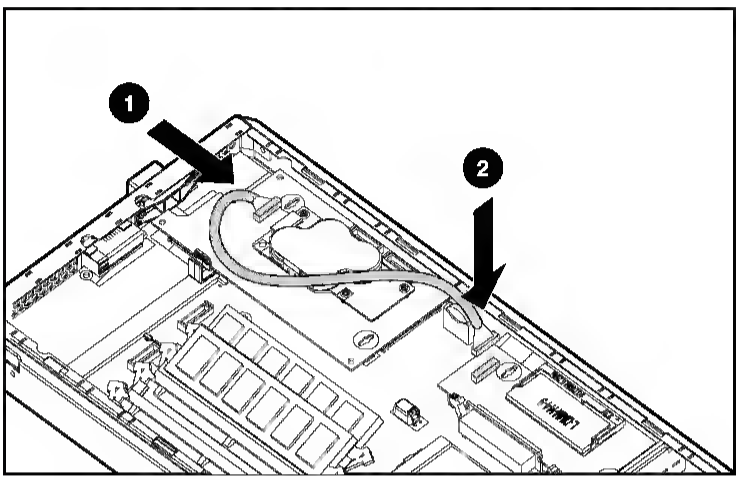


Figure 2-9: Cabling the Battery-Backed Write Cache Enabler

5. Reinstall the access panel. Refer to the "Installing the Access Panel" section in this chapter.

Hot-Plug SCSI Hard Drives and Blanks

Removing Hard Drive Blanks

The server blade ships standard with two hard drive blanks. Before installing a hot-plug SCSI hard drive, you must remove a blank.

CAUTION: Always populate drive bays with either a hard drive or blank. Proper airflow can only be maintained when the bays are populated. Unpopulated drive bays can lead to improper cooling and thermal damage.

To remove a hard drive blank:

1. Press and hold the port-colored release button (1).

   NOTE: Port-colored items indicate hot-plug components.

2. Pull the blank out of the drive bay (2).

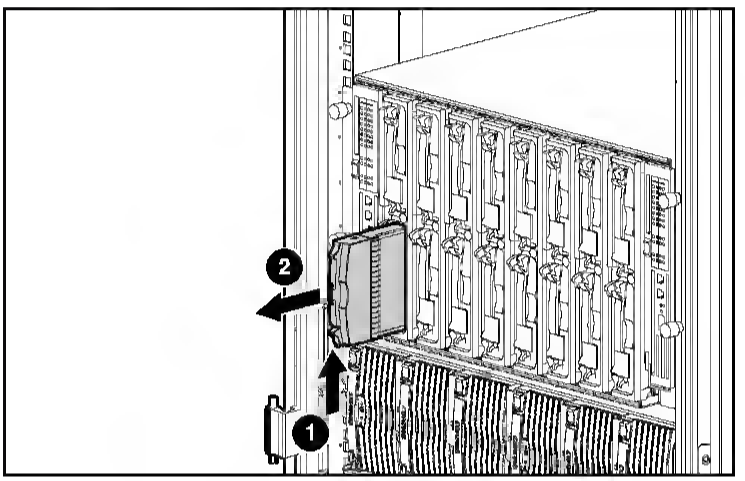


Figure 2-10: Removing a hard drive blank

NOTE: Store the hard drive blank for future use.

To install a hard drive blank, simply align the blank with the empty bay and slide the blank into the bay until tbe locking button engages.

SCSI ID Numbers

The server blade hot-plug SCS1 hard drives have unique SCSI IDs that the system automatically sets. The 1Ds number from top to bottom on each server blade. Figure 2-11 shows SCSI IDs for the ProLiant BL20p server blade.

IMPORTANT: Always populate hard drive bays starting with SCSI ID 0.

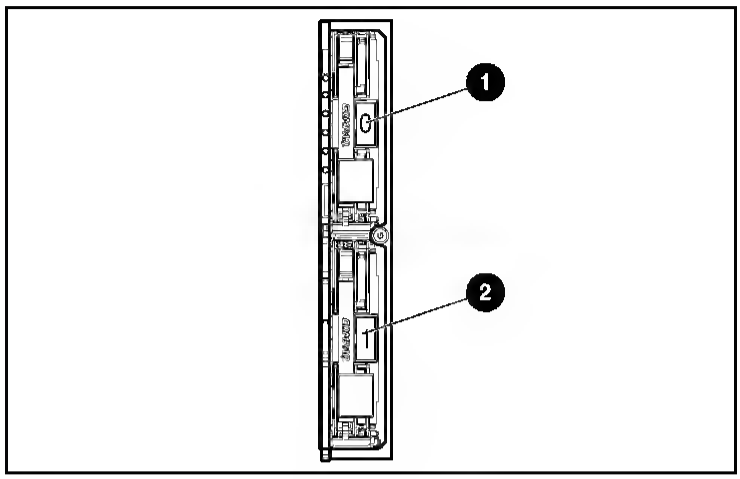


Figure 2-11: SCSI ID numbers

Table 2-3: ProLiant BL20p Server Blade SCSI Ids

Item	Description
1	SCSI ID 0
2	SCSI ID 1

Removing Hot-Plug SCSI Hard Drives

To remove hot-plug SCSI hard drives:

1. Back up all server blade data on the hard drive.

CAUTION: Before removing a hot-plug SCSI hard drive, use the LEDs to determine the status of the drive. Refer to the "Hot-Plug SCSI Hard Drive" section in Appendix E, "LEDs and Switches."

CAUTION: If you are replacing a drive that is part of an array, refer to the hot-plug SCSI hard drive replacement guidelines in the *Compaq Servers Troubleshooting Guide.*

2. Press the ejector lever release button (1).
3. Pull the ejector lever open (2).
4. Remove the hard drive (3).

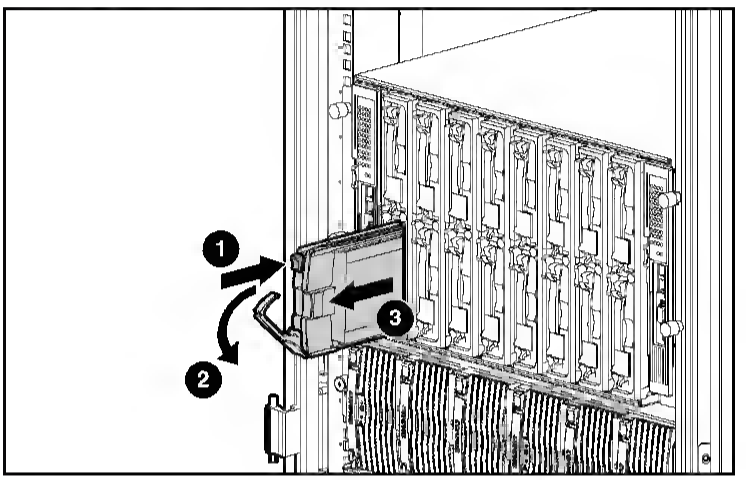


Figure 2-12: Removing a hot-plug SCSI hard drive

Installing Hot-Plug SCSI Hard Drives

To install hot-plug SCSI hard drives:

1. Remove the existing hard drive blank or SCSI hard drive from the bay:
   - If a hard drive blank is installed in the bay, refer to the "Removing Hard Drive Blanks" section in this chapter.
   - If a SCSI hard drive is already installed in the bay, refer to the "Removing Hot-Plug SCSI Hard Drives" section in this chapter.

2. Insert the hot-plug SCSI hard drive (1). Be sure the drive seats firmly into the connector on the SCSI backplane.
3. Close the ejector lever (2).

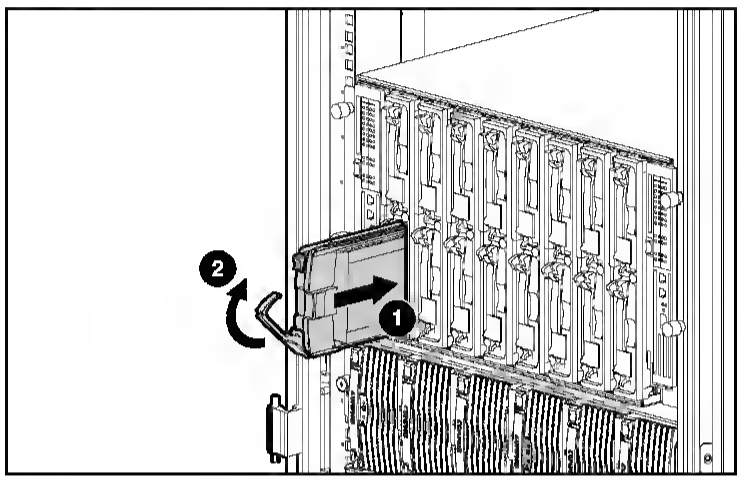


Figure 2-13: Installing a hot-plug SCSI hard drive

4. If you replaced a hard drive, restore the server blade data from the backup.
5. Use tbe hot-plug SCSI hard drive LEDs to identify the status of the installed drive. For more information about these LEDs, refer to the "Hot-Plug SCSI Hard Drive" section in Appendix E, "LEDs and Switches."
6. Resume normal server blade operations.

Server Blades

Before installing server blades for the first time, define the hardware configuration and server blade deployment process. Refer to Chapter 3, "Configuring and Deploying Server Blades."

Installing a Server Blade

The server blade enclosure ships standard with server blade blanks.

CAUTION: Always populate the server blade enclosure bays with either a server blade or server blade blank. Proper airflow can only be maintained when the bays are populated. Unpopulated bays can lead to improper cooling and thermal damage.

To install a server blade:

1. Remove the server blade blank:
   a. Press the release buttons (1).
   b. Slide the server blade blank out of the bay (2).

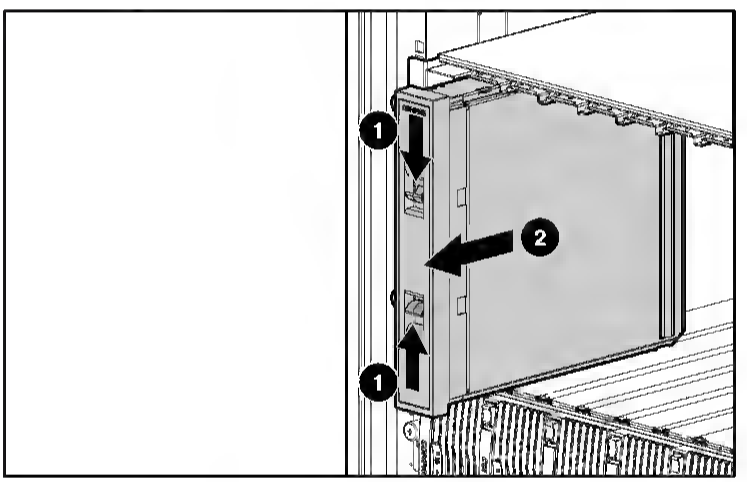


Figure 2-14: Removing a server blade blank

NOTE: Store the server blade blank for future use.

2. Align the keyed end of the server blade with the guide at the end of a bay on the server blade enclosure.

IMPORTANT: The server blade is keyed to fit only one way in the bay. If the server blade does not slide easily into the bay, be sure that the server blade is oriented properly.

3. Install the server blade into the bay (1). Slide the server blade fully into the bay.
4. Close the ejecting lever (2).

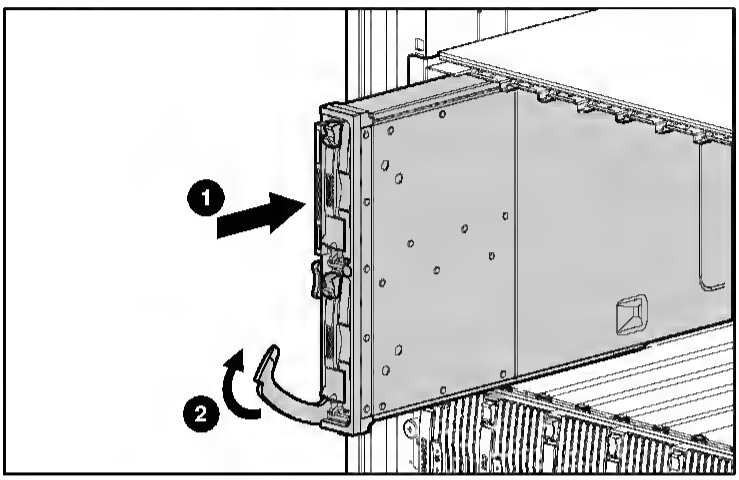


Figure 2-15: Installing a server blade

Powering Up the Server Blade

To install a server blade in the server blade enclosure, refer to the "Installing a Server Blade" section in this chapter.

Server blades are set to power up automatically. If you changed this setting, use one of the following methods to power up the server blade:

- Power On/Standby button
  - — A momentary press initiates a power-up request. The system detects if power is available to power on the server blade.
  - — A long press, 5 or more seconds, initiates a power-up override. The system is forced to power up tbe server blade without detecting available power.

CAUTION: Always observe iLO alerts before initiating a power-up override to prevent a hot-plug power supply fault and possible loss of system power.

NOTE: You may choose to perform a power-up override to power up a server blade and to override the power-up request function when the management modules are not in use and when you know that sufficient power is available.

- Virtual power button features through the iLO remote console
  - — A momentary power-up selection initiates a power-up request. The system detects if power is available to power up the server blade.
  - — A hold power-up selection initiates a power-up override. The system is forced to power up the server blade without detecting available power.

For more information about iLO, refer to Chapter 3, "Configuring and Deploying Server Blades."

Using the Diagnostic Cable

To perform some server blade configuration and diagnostic procedures, use the diagnostic cable that ships with the system. The cable provides a 10/100 Ethernet RJ-45 connector through which you can access the server blade with the iLO Remote Console and a client PC. The cable also has a kernel debug connector that requires a null modem serial cable and enables trained personnel to perform advanced diagnostic procedures.

Identifying Diagnostic Cable Connectors

Use Figure 2-16 and Table 2-4 to identify diagnostic cable connectors.

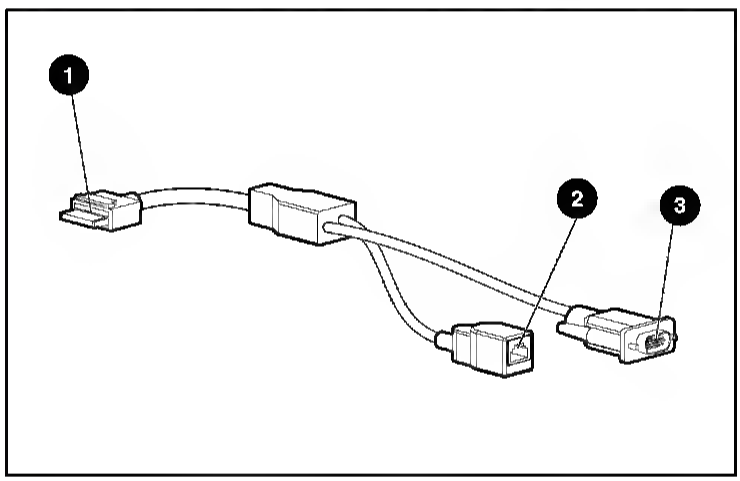


Figure 2-16: Diagnostic cable connectors

Table 2-4: Diagnostic Cable Connectors

Item	Description
1	Server blade connector
2	iLO RJ-45 (10/100 Ethernet) connector
3	Kernel debug connector

Connecting the Diagnostic Cable

To use the diagnostic cable, you must have the following:

- A client PC with a 10/100 Ethernet RJ-45 connector
- A network cable with RJ-45 connectors

To connect the diagnostic cable:

IMPORTANT: Do not connect the diagnostic cable to a hub. All server blades have the same IP address through the diagnostic port. Multiples on a hub make the server blades indistinguishable on the network. Refer to "iLO Guidelines for Accessing the Server Blade" in Chapter 3, "Configuring and Deploying Server Blades," for the default server blade IP address.

NOTE: Connecting to the diagnostic port with the diagnostic cable automatically disables the iLO connection on the rear of the server blade.

1. Connect one end of the RJ-45 network cable to the diagnostic cable (1).
2. Connect the other end of the network cable to the 10/100 Ethernet RJ-45 connector on the client PC (2).

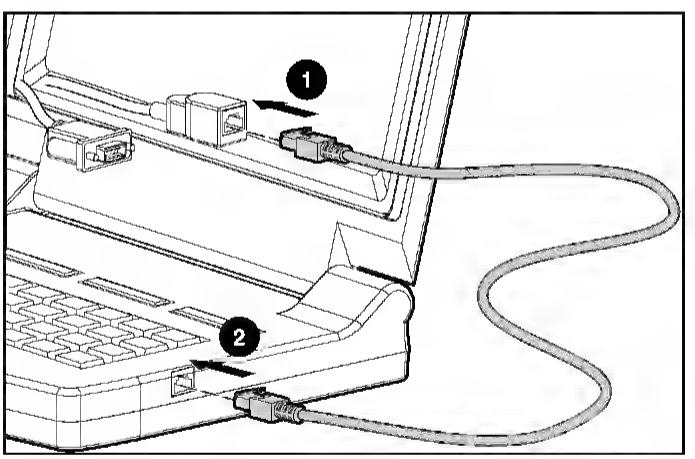


Figure 2-17: Connecting an RJ-45 network cable

3. Connect the server blade connector on the diagnostic cable to the diagnostic port on the server blade.

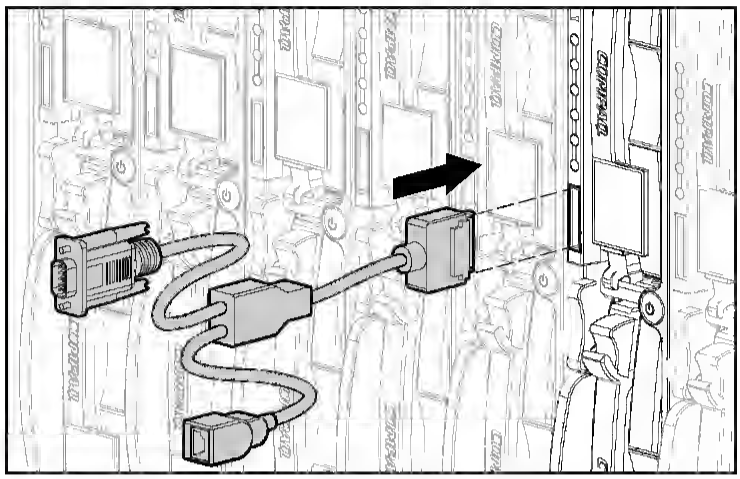


Figure 2-18: Connecting the diagnostic cable to the server blade

CAUTION: Always be sure to squeeze the locking button on the server blade connector before disconnecting the diagnostic cable from the diagnostic port. Failure to do so can result in damage to the equipment.

3

Configuring and Deploying Server Blades

Configuration and Deployment Overview

To configure and deploy the server blades:

1. Choose an operating system. Refer to the "Supported Operating Systems" section in this chapter.
2. Select a deployment method and establish a deployment infrastructure. Refer to the "Deployment Methods and Infrastructure" section in this chapter.
3. Install all system hardware. Refer to Chapters 1 and 2 of this guide and to the *Compaq ProLiant BL p-Class System Setup and Installation Guide*.
4. Connect to the server blade using one of the following methods:
   - — Through the existing network (in the rack)
   - — Through the server blade diagnostic port (in the rack)
   - — Through the server blade diagnostic port (out of the rack)
   - — Through the server blade rear panel connectors (out of the rack)

   Refer to the "Configuration Hardware Setup" section in this chapter.
5. Access the server blade with the iLO Remote Console. Refer to the "Integrated Lights-Out Management" section in this chapter.
6. Configure the server blades by the method you chose in step 2.
7. Deploy subsequent server blades.

Supported Operating Systems

The server blade supports the following operating systems:

- Microsoft Windows
- Linux

For the most current information about operating system support on server blades, refer to the operating system support matrix available at the Compaq FTP site:

ftp://ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf

To install an operating system, refer to the documentation and the *Compaq Integrated Lights-Out User Guide* that ships with the system.

Deployment Methods and Infrastructure

To deploy the server blades, you must choose a configuration method and establish the appropriate deployment infrastructure. The Compaq ProLiant BL p-Class system supports the following deployment methods:

- ProLiant Essentials Rapid Deployment Pack (recommended)
- Diskette or diskette image deployment
  - — Network-based PXE deployment
  - — iLO Virtual Floppy

IMPORTANT: To deploy the server blades without the Rapid Deployment Pack, you must create a bootable diskette or image of a bootable diskette.

ProLiant Essentials Rapid Deployment Pack

The ProLiant Essentials Rapid Deployment Pack software is the preferred method for rapid, high-volume server blade deployments. The Rapid Deployment Pack software integrates two powerful products: Altiris eXpress Deployment Server and the Compaq ProLiant Integration Module.

The Altiris eXpress Deployment Server console's intuitive graphical user interface provides simplified point-and-click and drag-and-drop solutions that enable you to deploy target server blades remotely, perform imaging or scripting functions, and maintain software images.

Advanced features for Compaq blade systems detect and display server blades based on their physical rack, enclosure, and bay location. You can deploy or replace faulty server blades and set the Altiris console to automatically configure these server blades with pre-defined and stored configurations.

For example, if you assign a certain enclosure bay to support a Web server blade, the console automatically detects an inserted server blade and begins loading the appropriate pre-defined configuration image of drivers, utilities, and software. In this way, the configuration is managed and consistent with other blades supporting the same function.

For more information about the ProLiant Essentials Rapid Deployment Pack, refer to the documentation that ships on the ProLiant Essentials Rapid Deployment Pack CD or contact a Compaq authorized reseller.

Diskette or Diskette Image Deployment

To configure the server blade without the Rapid Deployment Pack software, you must create a boot diskette or a boot diskette image.

Creating a Boot Diskette

For Windows operating systems, use the documentation that ships with the operating system or follow the instructions displayed on

www.compaq.com/manage/web_resources.html

For Linux operating systems, use the documentation that ships with the operating system or follow the instructions displayed on

www.redhat.com

Creating a Microsoft Windows Diskette Image

To create a diskette image for deployment purposes, you can use one of the following:

- CPQIMAGE Utility
- iLO

CPQIMAGE Utility

This utility is part of the Compaq *SmartStart*™ Scripting Toolkit, available from

www.compaq.com/manage/toolkit.html

NOTE: You can also download the SmartStart Scripting toolkit as part of the latest Microsoft Windows Support Paq. Refer to the Compaq ProLiant BL p-Class system product page on the Compaq website.

To create the image with the CPQIMAGE Utility:

1. Locate the CPQIMAGE Utility on

   www.compaq.com/smartstart

2. Follow the instructions in the utility to create a diskette image on the hard drive from the bootable diskette.

iLO

To create the image with iLO, refer to the *Compaq Integrated Lights-Out User Guide* that ships with the system.

Creating a Linux Diskette Image

To create a diskette image for deployment purposes, you can use one of the following:

- Rawrite Utility (RAWRITE.EXE) — Use this utility to create a Linux diskette image on a Microsoft platform.
- DD.exe — Use this executable program to create a Linux diskette image on a Linux platform.

These applications are available from the Linux operating system CD.

Unattended Deployment

You can use the SmartStart Scripting Toolkit to create scripts for unattended deployment. Download the SmartStart Scripting Toolkit from

www.compaq.com/manage/toolkit.html

Network-Based PXE Deployment

To deploy an operating system to multiple server blades, you can install a PXE deployment server on the network.

PXE is a component of the Intel Wired for Management (WfM) specification. The PXE model enables server blades to load and execute a network bootstrap program (NBP) from a PXE server and to execute a pre-configured image. The image can be an operating system image created by software utilities or a boot diskette image. This feature enables a user to configure a server blade and install an operating system over a network.

When a PXE-enabled client boots, it obtains an IP address from a dynamic host configuration protocol (DHCP) server. The client obtains the name of the NBP from the appropriate boot server. Then, the client uses trivial file transfer protocol (TFTP) to download the NBP from the boot server and executes the image.

For more information about PXE deployment, visit the Compaq ProLiant BL p-Class system product page on the Compaq website. You can also visit

www3.compaq.com/support/reference_library/viewdocument.asp?countrycode=1000&prodid=2032|Linux+-+Red+Hat+Linux+7.x&source=163E-0102A-WWEN.xml&dt=21

Deployment Infrastructure

To establish the network-based PXE deployment infrastructure, you must provide the following software and minimum hardware:

- Client PC (administrative workstation)
  - — Intel Pentium III or higher processor (700 MHz or greater recommended)
  - — 128 MB of RAM
  - — Microsoft Windows 2000 Professional or Microsoft Windows XP operating system
  - — Microsoft Internet Explorer 5.5 or above with 128-bit encryption
  - — Ethernet NIC with 10/100 RJ-45 connector
  - — TCP/IP networking and an IP address compatible with one of the following: the iLO Diagnostic Port IP address or an assigned DHCP or static IP address
  - — CD-ROM drive and/or diskette drive
  - — Java Runtime Environment version 1.3.1, available at

    www.compaq.com/manage/jvm.html
- DHCP server (IP address assignment)
  - — Pentium or Pentium II 200-MHz or faster processor
  - — 64 MB of RAM
  - — 64 MB of free hard drive space
  - — 10-Mb/s network adapter

- PXE deployment server (storing boot images)
  - — Intel Pentium III or higher processor (500 MHz recommended)
  - — 256 MB of RAM
  - — 10-Mb/s network adapter
  - — CD-ROM drive
- NFS repository server (only required for Linux deployment)
  - — Red Hat Linux 7.3 operating system installed
  - — Network connection
  - — CD-ROM drive
  - — NFS installed
  - — 1.5 GB of available disk space on the /usr directory
- Windows repository server (only required for Microsoft Windows deployment)
  - — Microsoft Windows 2000 operating system installed
  - — Network connection
  - — CD-ROM drive
  - — 1.5 GB of available disk space on /usr

Deployment Guidelines

- To install Windows 2000 Server using PXE, Compaq recommends using the ProLiant Essentials Rapid Deployment Pack software (which includes pre-written scripts to install Windows 2000 Server on the server blades). Microsoft Remote Installation Server (RIS) does not support the installation of Windows 2000 Server.
- For each server blade that you are deploying, the PXE server must be connected to NIC 1. The ProLiant BL20p server blade assigns PXE functions to NIC 1. For NIC connector locations on RJ-45 patch panels and interconnect switches, refer to the RJ-45 patch panel option card or the interconnect switch option card.

- For detailed instructions on network-based PXE installation for Red Hat Linux, refer to the white papers on

  www.compaq.com/support

iLO Virtual Floppy Deployment

You can use a diskette or diskette image to perform local or remote server blade deployment without a PXE-enabled server.

Deployment Infrastructure

To establish the diskette or diskette image deployment infrastructure, you must provide the following software and minimum hardware:

- Client PC (administrative workstation)
  - — Intel Pentium III or higher processor (700 MHz or greater recommended)
  - — 128 MB of RAM
  - — Microsoft Windows 2000 Professional or Microsoft Windows XP operating system
  - — Microsoft Internet Explorer 5.5 or above with 128-bit encryption
  - — Ethernet NIC with 10/100 RJ-45 connector
  - — TCP/IP networking and an IP address compatible with one of the following: the iLO Diagnostic Port IP address or an assigned DHCP or static IP address
  - — CD-ROM drive and/or diskette drive
  - — Java Runtime Environment version 1.3.1, available at

    www.compaq.com/manage/jvm.html
- Network server with an operating system installed

Deployment Procedure

To perform a diskette or diskette image deployment:

1. Do one of the following:
   - — Insert the boot diskette into the client PC from which you are running the iLO Remote Console.
   - — Use iLO to create an image file of the boot diskette.
   - — Copy the image of the boot diskette to a location on the network or the client PC hard drive.
2. Access the server blade through the iLO Remote Console. Refer to the "Accessing the Server Blade with iLO Remote Console" section in this chapter.
3. Select the **Virtual Devices** tab.
4. Select **Virtual Media**.
5. Use the Virtual Media applet to select the local diskette or image file and connect the Virtual Floppy to the server blade.
6. Use the iLO Virtual Power Button feature to reboot the server blade.
7. After the server blade boots, follow the normal network installation procedure for the operating system.

Configuration Hardware Setup

You can configure the server blades in the rack or out of the rack, as long as the proper connection to the network exists. Connect to the server blade in one of the four following ways:

- Through the existing network

  This method requires you to install the server blade in its enclosure and assign it an IP address (manually or using DHCP). Then, you can use the iLO Remote Console to access the server blade.

- Through the server blade diagnostic port

  This method requires you to connect the diagnostic cable to the diagnostic port and a client PC. Using the static IP address listed on the diagnostic cable label and the initial access information on the front of the server blade, you can access the server blade with the iLO Remote Console. For diagnostic cabling instructions, refer to the *ProLiant BL p-Class System Diagnostic Station Installation Guide* that shipped with tbe diagnostic station.

- Through the server blade diagnostic port (with the diagnostic station)

  This method requires you to power the server blade with the optional diagnostic station and connect to an external computer using the static IP address and the diagnostic cable. For cabling instructions, refer to the documentation that ships with the diagnostic station or to the Documentation CD.

  IMPORTANT: This method provides the proper connections for iLO access and functionality, but it does not support operating system deployment.

- Through the server blade rear panel connectors (with the diagnostic station)

  This method enables you to configure a server blade out of the rack by powering the blade with the diagnostic station and connecting to the existing network through a hub. The IP address is assigned by a DHCP server on the network.

For more information about these hardware and cabling configurations, refer to the *Compaq ProLiant BL p-Class System Hardware Configuration and Installation* poster and the documentation that ships with the diagnostic station.

For more information about iLO, refer to the "Integrated Lights-Out Management" section in this chapter, or refer to the *Compaq Integrated Lights-Out User Guide* that ships with the system.

Integrated Lights-Out Management

The advanced version of Compaq Integrated Lights-Out is a standard component of selected Compaq ProLiant server blades. Integrated Lights-Out (iLO) provides server health and remote server blade manageability. Integrated Lights-Out features are accessed from a network client PC using a supported Web browser. In addition to other features, iLO provides keyboard, mouse, and video (text and graphics) capability for a server blade, regardless of the state of the host operating system or host server blade.

The iLO subsystem includes an intelligent microprocessor, secure memory, and a dedicated network interface. This design makes iLO independent of the host server blade and its operating system. Integrated Lights-Out provides remote access to any authorized network client, sends alerts, and provides other server blade management functions.

Using a supported Web browser, you can:

- Remotely access the console of the host server blade, including all text mode and graphics mode screens with full keyboard and mouse controls.
- Remotely power up, power down, or reboot the host server blade.
- Remotely boot a host server blade to a virtual floppy image to perform a ROM upgrade or to install an operating system.
- Send alerts from iLO regardless of the state of the host server blade.
- Access advanced troubleshooting features provided by iLO.
- Launch a Web browser, use Simple Network Management Protocol (SNMP) alerting, and diagnose iLO using Compaq Insight Manager 7.

For more information about iLO features, refer to the *Compaq Integrated Lights-Out User Guide* that ships with the system.

Client PC Requirements

To use iLO to access the server blade, you must use a client PC with the following minimum software and hardware requirements:

- Intel Pentium III or higher processor (700 MHz or greater recommended)
- Microsoft Windows 2000 Professional or Microsoft Windows XP operating system
- Microsoft Internet Explorer 5.5 or above with 128-bit encryption
- Ethernet NIC with 10/100 RJ-45 connector
- TCP/IP networking and an IP address compatible with one of the following:
  - — The iLO Diagnostic Port IP address
  - — An assigned DHCP or static IP address
- CD-ROM drive and/or diskette drive
- Java Runtime Environment version 1.3.1, available at

  www.compaq.com/manage/jvm.html

iLO Guidelines for Accessing the Server Blade

Use the following guidelines when you prepare to access the server blade with the iLO Remote Console for the first time.

Direct Cabling Method

To use the Remote Console graphical interface with the direct cabling method for the first time, you must do the following:

1. Locate the iLO Default Network Settings tag on the server blade.
2. Locate the static IP address on the diagnostic cable label.

   The default TCP/IP address for the iLO Diagnostic Port is 192.168.1.1; the default subnet mask is 255.255.255.0.

To connect to the server blade with the diagnostic cable, refer to Chapter 2, "Installing the Server Blade and Options."

Network Cabling Method

With the network cabling method, the iLO default configuration enables the server blade to obtain its IP address from the DHCP server. However, if you have changed the default configuration to use a static IP address, iLO continues to use the static IP address when you connect with the network cabling method.

To connect the server blade to the diagnostic station and network, refer to the documentation that ships with the diagnostic station.

Browser Capability

Be sure that the IP address and subnet mask of the client PC are compatible with the IP address and subnet mask of the iLO diagnostic port. In addition, be sure that the browser does not use a proxy server with the same IP address and subnet mask as the iLO diagnostic port.

Accessing the Server Blade with iLO Remote Console

To access the server blade with iLO for the first time:

1. Locate the iLO Default Network Settings tag that contains the following information:
   a. Default user ID
   b. Default password
   c. DNS name
   d. Server blade serial number

IMPORTANT: If you have previously configured the iLO settings to change the default DNS name, user ID, or password, use the values you configured. If you made any changes to the default value, the values on the iLO Default Network Settings tag are no longer valid.

IMPORTANT: If you have forgotten the iLO access values or cannot gain access to the iLO, use the iLO switch (SW2) on the server blade system board to override iLO security. Refer to Appendix E, "LEDs and Switches."

2. From the administrator workstation or client PC, open a web browser.
3. Browse to the iLO Remote Console using one of the following methods:
   — The DNS name provided on the iLO Default Network Settings tag
   — The IP address previously configured (if you are not using DHCP)
   — The IP address assigned by the DHCP server
   — The IP address from the iLO Diagnostic Cable (if you are using the Diagnostic Port)
4. When the certificate screen appears, accept the certificate.
5. At the login screen, enter the default user ID and default password provided on the iLO Default Network Settings tag.
6. At the main screen, select the **Remote Console** tab.
7. Follow the on-screen directions. Refer to the *Compaq Integrated Lights-Out User Guide* that ships on the Documentation CD.

Software and Utilities

This section provides information about the following utilities and support tools:

- RBSU
- iLO RBSU
- Option ROM Configuration for Arrays (ORCA) Utility
- Redundant ROM Support
- *ROMPaq*™ Utility
- Compaq Insight Manager 7
- Compaq Diagnostics Utility

- Automatic Server Recovery-2 (ASR-2)
- Integrated Management Log (IML)

Compaq also offers the following software components:

- Compaq Health and Wellness Driver and IML Viewer
- Compaq iLO Management Interface Driver
- Compaq Rack Infrastructure Interface Service
- Compaq Management Agents

For Microsoft Windows operating system users, these items are included in the Microsoft Windows Customer Support Paq, available from the Compaq ProLiant BL p-Class system product page on the Compaq website.

Linux operating system users must install these items manually. For information about downloading these components, refer to

www.compaq.com/support

For information on how to use these components with the Linux operating system, refer to

www.compaq.com/products/servers/linux/linux-howtos.html

ROM-Based Setup Utility

NOTE: Most of the features in RBSU are not required in the setup of the server blade. The options in this utility are designed to assist with specific server blade configuration issues.

RBSU performs configuration activities and enables you to view server blade configuration information. The server blade ships pre-configured, and changes are not required unless you want to change the default settings.

To navigate RBSU, use the following keys:

- To access RBSU, use the iLO Remote Console and press the **F9** key wben prompted during power up.
- To navigate the menu system, use the arrow keys.
- To make selections, press the **Enter** key.

RBSU automatically saves settings when you press the **Enter** key. The utility does not prompt you for confirmation of settings before you exit the utility. To change a selected setting, you must select a different setting and press the **Enter** key.

Table 3-1 contains the default settings for options in primary RBSU menus.

Table 3-1: RBSU Default Settings

Menu/Option	Default Setting
System Options	
OS Selection	Windows 2000
Serial Number	
Embedded NIC Port 1 PXE Support	Enabled
Standard Boot Order (IPL)	*
Automatic Server Recovery	
ASR Status	Enabled
ASR Timeout	10 minutes
Thermal Shutdown	Enabled
Server Passwords	
Set Power-On Password	Disabled
Set Admin Password	Disabled
Advanced Options	
MPS Table Mode	AutoSet Table
POST Speed Up	Enabled
POST F1 Prompt	Enabled
ROM Selection	Use Current ROM
Wake on LAN	Enabled
NMI Debug Button	Enabled

* The default boot order is CD-ROM drive, diskette drive, hard drive, and network, respectively. The devices do not appear in the list unless they are connected to the system.

iLO ROM-Based Setup Utility

The iLO ROM-Based Setup Utility (iLO RBSU) is the recommended method to configure and set up the iLO. The iLO RBSU is designed to assist you with setting up an iLO on a network; it is not intended for continued administration.

To run iLO RBSU:

1. Restart or power up the server blade.
2. Press the **F8** key when prompted during the Power-On Self-Test (POST). The iLO RBSU runs.
3. Enter a valid iLO user ID and password with the appropriate iLO privileges (Administer User Accounts, Configure iLO Settings).
4. Make and save any necessary changes to the iLO configuration.
5. Exit iLO RBSU, when finished.

Compaq recommends using DNS/DHCP with iLO to simplify installation. If DNS/DHCP cannot be used, use the following procedure to disable DNS/DHCP and to configure the IP address and the subnet mask:

1. Restart or power up the server blade.
2. Press the **F8** key when prompted during the POST. The iLO RBSU runs.
3. Enter a valid iLO user ID and password with the appropriate iLO privileges (Administer User Accounts, Configure iLO Settings).

   NOTE: Use the arrow keys to highlight selections.

4. Select **Network, DNS/DHCP,** press the **Enter** key, and then select **DHCP Enable.** Press the spacebar to turn off DHCP. Be sure that DHCP Enable is set to **Off** and save the changes.
5. Select **Network, NIC,** and **TCP/IP,** press the **Enter** key, and type the appropriate information in the **IP Address**, **Subnet Mask**, and **Gateway IP Address** fields.
6. Save the changes. The iLO system automatically resets to use tbe new setup when you exit the iLO RBSU.

Option ROM Configuration for Arrays Utility

The ORCA Utility is a menu-driven utility that does not require a CD and can be started when the server blade is booting. This utility enables users to perform the following functions:

- Create, configure, and/or delete logical drives
- Specify RAID levels
- Assign online spares
- Set interrupts and the boot controller order

To run ORCA, press the **F8** key from the iLO Remote Console when the server blade is booting.

Redundant ROM Support

Server blades enable you to upgrade or configure the ROM safely with redundant ROM support. The server blade has a 2-MB ROM that acts as two, separate 1-MB ROMs. In the standard implementation, one ROM contains the current ROM program version, while the other ROM contains a backup version.

Safety and Security Benefits

When you flash the system ROM, ROMPaq writes over the older ROM and saves the current ROM as a backup, enabling you to switch easily to the backup ROM version if the new ROM becomes corrupted for any reason. This feature protects the previous ROM version, even if you experience a power failure while flashing the ROM.

Access to Redundant ROM Settings

To access the redundant ROM:

1. Access RBSU by pressing the **F9** key during power up when the prompt displays.
2. Select **Advanced Options**.
3. Select **ROM Selection**.

4. Select one of the ROM banks as the system ROM.
5. Press the **Enter** key.
6. Press the **Esc** key to exit the current menu or press the **F10** key to exit RBSU.
7. Restart the server blade.

When the server blade boots, the system identifies whether the current ROM bank is corrupt. If a corrupt ROM is detected, the system boots from the backup ROM and alerts you through POST or IML that the ROM bank is corrupt.

If both the current and backup versions of the ROM are corrupt, you must return the system board for a service replacement. Refer to the *Compaq ProLiant BL p-Class System Maintenance and Service Guide* and contact a Compaq authorized reseller.

Remote ROM Flash

The system contains individual firmware for various components.

The ProLiant BL20p server blade contains:

- Server blade system ROM
- Smart Array 5i Controller module ROM
- iLO ROM

The server blade and power enclosures contain:

- Server blade management module ROM
- Power management module ROM

Using the *Smart Components for Remote ROM Flash* with the Remote Deployment Utility (RDU) console application, Remote ROM Flash enables you to upgrade the firmware (BIOS) on a server blade from a remote location.

To update the ROM from a remote location, download the Online Flash Utility from

www.compaq.com

If a power loss occurs during a firmware upgrade, redundant ROM support enables data recovery.

ROMPaq Utility

Flash ROM enables you to upgrade tbe firmware (BIOS) with system or option ROMPaq utilities.

To upgrade the BIOS:

1. Download the latest ROMPaq from

   www.compaq.com

2. Follow the instructions and create a bootable diskette.

   IMPORTANT: You can use the iLO Virtual Media applet to create the image file. Refer to the *Compaq Integrated Lights-Out User Guide* on the Documentation CD. If you use this method, omit step 3.

3. Create a diskette image from the bootable diskette:

   a. Locate the CPQIMAGE Utility on

      www.compaq.com

   b. Follow the instructions in the utility to create a diskette image on the hard drive from the bootable diskette.

4. Access the server blade through the iLO Remote Console. Refer to the *Compaq ProLiant BL p-Class System Hardware Configuration and Installation* poster.

5. Use tbe iLO virtual power button to reboot the server blade and set the blade to boot from the diskette image you created in step 2.

The ROMPaq Utility checks the system and provides a choice (if more than one exists) of available ROM revisions. By default, the oldest ROM version is updated. This procedure is the same for both system and option ROMPaq utilities.

If a power loss occurs during a firmware upgrade, redundant ROM support enables data recovery.

Compaq Insight Manager 7

Compaq Insight Manager 7 is the Compaq application for easily managing network devices. Compaq Insight Manager 7 delivers intelligent monitoring and alerting as well as visual control of Compaq devices. Documentation for Compaq Insight Manager 7 is available on the ProLiant Essentials Rapid Deployment Pack CD in the *OVERVIEW.HLP* file.

IMPORTANT: You must install and use Compaq Insight Manager 7 to benefit from the Compaq pre-failure warranties on processors, hard drives, and memory modules.

Compaq Insight Manager 7 features are described below:

- Comprehensive Fault Management — provides you with comprehensive fault management for all major subsystems, including pre-failure alerting for disks, memory, and processors
- Integration Management — enables you to effectively deploy and manage configurations throughout the enterprise using Integration Server and Insight Version Control
- Performance Management — allows you to set performance and capacity thresholds for management variables related to CPU and bus usage, NIC throughput, and logical disk capacity
- Workstation Management — enables you to monitor and manage Compaq Professional Workstations
- Client Management — enables you to manage faults and assets on Compaq *Deskpro*™ computers and Compaq portables
- *Netelligent*™ Management — allows you to receive alarms from Netelligent devices (full management of Netelligent devices is supported through integration with Compaq Netelligent Management Software)
- Asset Management — enables you to export asset information from the Compaq Insight Manager 7 database to leading database and spreadsheet applications
- Remote Management — enables you to manage in-band or out-of-band devices online or offline from anywhere

- Reporting — allows you to gather historic performance information, using Automatic Data Collection, for graphing or export purposes
- Integration with Enterprise Management Platforms — provides integration with leading management platforms including HP OpenView, IBM NetView, SunNet Manager, and Microsoft Systems Management Server

Compaq Diagnostics Utility

The Diagnostics Utility is accessible from a diskette that you create from the ProLiant Essentials Rapid Deployment Pack CD. To run Diagnostics, access the Diagnostics Utility image using the virtual floppy and restart the server blade. The server blade boots from the image and runs the Diagnostics Utility.

Automatic Server Recovery-2

ASR-2 is a feature that causes the system to restart when a catastrophic operating system error occurs, such as a blue-screen or kernel panic. A system fail-safe timer, the ASR-2 timer, starts when the Compaq System Management driver, also known as the Health driver, is loaded. When the operating system is functioning properly, the system periodically resets tbe timer. However, when the operating system fails, the timer expires and restarts the server blade.

ASR-2 increases server blade availability by restarting the server blade within 10 minutes after a system hang or shutdown. At the same time, the Compaq Insight Manager 7 console notifies you by sending a message to a designated pager number that ASR-2 has restarted tbe system. You can disable ASR-2 from the Compaq Insight Manager 7 console or RBSU.

Integrated Management Log

The IML records hundreds of events and stores them in an easy-to-view form. The IML time-stamps each event with 1-minute granularity.

Events listed in the IML are categorized as one of four event severity levels:

- Status — indicates that the message is informational only
- Repaired — indicates that corrective action was taken
- Caution — indicates a non-fatal error condition occurred
- Critical — indicates a component failure has occurred

Viewing the Log

You can view recorded events in the IML in several ways, including the following:

- From within the iLO Web pages
- From within the Compaq Insight Manager 7
- From within the Compaq Survey Utility
- From within operating system specific IML viewers
  - — For Windows 2000, Event Viewer, or Compaq IML Viewer
  - — For Linux operating systems, Compaq IML Viewer Application

Compaq Insight Manager 7

Compaq Insight Manager 7 is a server blade management tool that provides in-depth fault, configuration, and performance monitoring of hundreds of Compaq server blades from a single management console. The system parameters that are monitored describe the status of all key server blade components. By being able to view the events that occur to these components, you can take immediate action.

Use the instructions in the following section to view and print the event list from within Compaq Insight Manager 7. You can also mark a critical or caution event as repaired after the affected component has been replaced. For example, when a failed DIMM is replaced, you can mark the event as repaired, which lowers the severity of the event.

NOTE: You can only view the list from the Recovery/Integrated Management Log screen.

Viewing the Event List

To view the event list:

1. From the Compaq Insight Manager 7, select the appropriate server blade; then select **View Device Data**. The selected server blade appears with buttons around its perimeter.
2. Click **Recovery**.
3. Select **Compaq Integrated Management Log**.
4. If a failed component has been replaced, select the event from the list, and then select **Mark Repaired**.

Printing the Event List

To print the event list:

1. From the Compaq Insight Manager 7, select the appropriate server blade. The selected server blade appears with buttons around its perimeter.
2. Click **Configuration**.
3. Click **Recovery**.
4. Click **Print**.

Compaq Survey Utility

The Compaq Survey Utility is a serviceability tool that delivers online configuration capture and comparison to maximize server blade availability. It is available on the Rapid Deployment Pack CD or on

www.compaq.com/support/files/servers/us/index.html

Refer to the ProLiant Essentials Rapid Deployment Pack CD for information on installing and running the Survey Utility. After you run the Survey Utility, you can view the IML by loading the output of the utility (typically called *SURVEY.TXT*) into a text viewer such as Microsoft Notepad. The event list follows the system slot information. After you open the text file, you can print it using the print feature of the viewer.

List of Events

The event list displays the affected components and the associated error messages. Though the same basic information displays, the format of the list may differ depending on whether you view it from within Compaq Insight Manager 7 or from within the Compaq Survey Utility.

Table 3-2 identifies the event types (affected components) and associated event messages for server blades.

Table 3-2: Server Blade Event Messages

Event Type	Event Message
Machine Environment	
Fan failure	System Fan Failure (Fan *X*, Location)
Overheat condition	System Overheating (Zone *X*, Location)
Main Memory	
Correctable error threshold exceeded	Corrected Memory Error threshold passed (Slot *X*, Memory Module *X*)
	Corrected Memory Error threshold passed (System Memory)
	Corrected Memory Error threshold passes (Memory Module unknown)
Processor	
Correctable error threshold exceeded	Processor Correctable Error threshold passed (Slot *X*, Socket *X*)
Uncorrectable error	Processor Uncorrectable internal error (Slot *X*, Socket *X*)
PCI Bus Error	PCI Bus Error (Slot *X*, Bus *X*, Device *X*, Function *X*)
Power Subsystem	
System configuration battery low	Real-Time Battery Clock Failing
Automatic Server Recovery	
System lockup	ASR Lockup Detected: Cause

continued

Table 3-2: Server Blade Event Messages *continued*

Event Type	Event Message
Operating System	
System crash	Blue Screen Trap: Cause [NT]
	Kernel Panic: Cause [Linux]
Automatic operating system shutdown	Automatic Operating System Shutdown Initiated Due to Fan Failure
	Automatic Operating System Shutdown Initiated Due to Overheat Condition
	Fatal Exception (Number *X*, Cause)

A

Regulatory Compliance Notices

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, your product has been assigned a unique series number. The series number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this series number. The series number should not be confused with the marketing name or model number of the product.

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon tbeir intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (i.e., personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

The rating label on the device shows which class (A or B) the equipment falls into. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or FCC ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian Notice (Avis Canadien)

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

CE

Products bearing the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community and if this product has telecommunication functionality, the R&TTE Directive (1999/5/EC).

Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards and regulations):

- EN 55022 (CISPR 22) – Electromagnetic Interference
- EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11) – Electromagnetic Immunity
- EN 60950 (IEC 60950) – Product Safety

Japanese Notice

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Taiwanese Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Battery Replacement Notice

Your computer is provided with an internal lithium battery or battery pack. There is a danger of explosion and risk of personal injury if the battery is incorrectly replaced or mistreated. Unless specific replacement instructions are provided as part of this guide, replacement is to be done by an authorized service provider using the spare designated for this product.

For more information about battery replacement or proper disposal, contact a Compaq authorized reseller or authorized service provider.

WARNING: Your computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. There is risk of fire and burns if the battery pack is not handled properly. To reduce the risk of personal injury:

- **Do not attempt to recharge the battery.**
- **Do not expose to temperatures higher than 60°C.**
- **Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.**
- **Replace only with the spare parts designated for this product.**

Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. To forward them to recycling or proper disposal, please use the public collection system or return them to Compaq, authorized Compaq Partners, or their agents.

B

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

Preventing Electrostatic Damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ± 10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or bootstraps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

NOTE: For more information on static electricity or for assistance with product installation, contact a Compaq authorized reseller.

C

Server Error Messages

Use POST error messages to assist in troubleshooting and performing basic diagnostic functions in the server blade.

POST error messages are displayed in the following locations:

- IML
- iLO POST log
- iLO Remote Console

For a complete listing of error messages and other troubleshooting information, refer to the *Compaq Servers Troubleshooting Guide* provided on the Documentation CD or online at

www.compaq.com/support/reference/index.html

Table C-1: POST Error Messages

Error Code	Audible Beeps	Probable Source of Problem	Action
Critical Failure Detected - System Shutting Down in	None	Blower assembly has failed.	Replace blower assembly.
Processor in incorrect socket. - System Halted!	None	Processor is installed in socket 2 only.	Install processor in socket 1.
REDUNDANT ROM ERROR: Backup ROM invalid. - Run ROMPAQ to correct error condition	None	System ROM and redundant ROM are both corrupt.	Run ROMPaq Utility.
REDUNDANT ROM ERROR: Bootblock invalid. - Contact COMPAQ Representative	None	ROM bootblock is corrupt.	Contact Compaq authorized service provider.
805-Unsupported Processor Detected System will ONLY boot ROMPAQ Utility.	None	One or both processors are unsupported.	Install supported processors.

D

Troubleshooting

For a list of new server error messages that are specific to this server, refer to Appendix C, "Server Error Messages."

For information on LEDs and switches specific to the server blade, refer to Appendix E, "LEDs and Switches."

For information about general troubleshooting techniques, diagnostic tools, error messages, and preventative maintenance, refer to the *Compaq Servers Troubleshooting Guide* on the Documentation CD.

When the Server Blade Does Not Start

This section provides systematic instructions on what to try and where to go for help for the most common problems encountered during initial POST. The server blade must first complete this test each time you power up, before it can load the operating system and start running software applications.

IMPORTANT: Always be sure that you have adequate system power applied to all the rack components before troubleshooting the server blade. You may need to add more hot-plug power supplies if you are installing additional server blades. If you have a power problem, refer to the *ProLiant BL p-Class System Setup and Installation Guide* and the *Compaq ProLiant BL p-Class System Overview and Planning* white paper.

If the server blade does not start:

1. Be sure that the server blade is fully seated in the enclosure.
2. Be sure that power is applied to the blade:
   a. Check the status using the system power LED. For the location and explanation of the system power LED, refer to the "Server Blade Front Panel" section in Appendix E, "LEDs and Switches."
   b. Check the server blade management modules and power management modules for proper cabling and power configuration switch settings.
   c. The server blade is configured to power up upon insertion. However, if you changed that setting, be sure that the Power On/Standby button was pressed firmly.
3. If the system does not complete POST or start loading an operating system:
   a. Use the iLO remote console or the iLO system status page to identify POST messages. Refer to the *Compaq Integrated Lights-Out User Guide.*
   b. Refer to the section on loose connections in the *Compaq Servers Troubleshooting Guide.*
4. Ensure the server blade is not rebooting repeatedly:
   a. Be sure that the system is not rebooting due to a problem that initiates an ASR-2 reboot.

      ASR-2 is defaulted to restart the server blade automatically, loading the operating system. If a critical error occurs, ASR-2 logs the error in the IML and restarts the server blade.

      For more information, refer to the *Compaq Servers Troubleshooting Guide.*
   b. Use the iLO remote console to identify a possible thermal event.
5. Restart the server blade. If the server blade does not restart, proceed to the "Server Blade Diagnostic Steps" section in this appendix.

6. Check the server blade for the following normal power-up sequence to be sure that the system meets the minimal hardware requirements and is powered up during normal operations:
   a. The front panel power LED turns from standby (amber) to on (solid green).
   b. The blowers start up.
   c. The health LED flashes during the POST process; it turns solid green if POST is successful.
   d. The system beeps twice after a successful boot.
7. View the iLO remote console for the following boot messages to be sure the system meets the minimal hardware requirements and is powered up during normal operations:
   a. Compaq ProLiant logo
   b. Memory test
   c. ROM information
   d. Copyright information
   e. Processor initialization
   f. Integrated Lights-Out initialization
   g. Array controller initialization
   h. PXE initialization
8. The operating system loads to complete the boot process.

If the server blade completes POST and attempts to load the operating system, refer to the "Problems After Initial Boot" section in this appendix.

Server Blade Diagnostic Steps

If the server blade does not power up, or powers up but does not complete POST, answer the questions in Table D-1 to determine appropriate actions based on the symptoms observed. According to the answers you give, you are directed to the appropriate table that immediately follows.

Table D-1: Diagnostic Steps

Question	Action
Question 1: Is the server blade system power LED illuminated?	If yes, continue to question 2. If no, refer to Table D-2.
Question 2: Is the server blade system power LED green?	If yes, continue to question 3. If no, refer to Table D-3.
Question 3: Is the server blade internal health LED solid green?	If yes, continue to question 4. If no, refer to Table D-4.
Question 4: Is the iLO remote console capable of displaying error information?	If yes, use the POST messages for further diagnosis. Refer to Table D-5 for details. If no, refer to Table D-5.

Table D-2: Is the Server Blade System Power LED Illuminated?

Answer	Possible Reasons	Possible Solutions
No	A broken connection exists between the following: • Server blade enclosure and server blade • Power converter module and system board • System board and SCSI backplane • SCSI backplane and power button/LED board The server blade enclosure, power converter module, system board, SCSI backplane, and/or power button/LED board may need to be replaced.	Do the following: 1. Remove the server blade from the enclosure. 2. Check the connectors on the rear of the blade and on the interior of the enclosure for damage. 3. With the system powered down, remove the access panel. 4. Be sure that the proper connections exist among the power converter module, system board, SCSI backplane, and power button/LED board. 5. Reinstall the access panel. 6. Reinstall the server blade. If the system power LED is still not illuminated, do one of the following: • Use the optional diagnostic station to power the server blade and use the iLO remote console to continue the diagnosis. • Move the server blade into a different slot to determine if the server blade or the enclosure is the source of the problem. • Contact a Compaq authorized service provider for replacement parts and service.
Yes	If the system power LED is illuminated, refer to Table D-3.	

Note: For LED locations and functions, refer to Appendix E, "LEDs and Switches." For cabling configurations, refer to the cabling and powering up section in the *ProLiant BL p-Class System Setup and Installation Guide*.

Table D-3: Is the Server Blade System Power LED Green?

Answer	Possible Reasons	Possible Solutions
No, it is amber	Power On/Standby button has not been pressed firmly.	Firmly press the Power On/Standby button.
	The NIC module or Smart Array 5i Controller is unseated.	Restart the server blade through the iLO Virtual Power button feature.
	The system may have experienced a short.	Reseat the NIC module or Smart Array 5i Controller module.
	The power converter module, system board, SCSI backplane, and/or power button/LED board may need to be replaced.	If the system power LED is still not green, and if the server blade internal health LED is amber or red, refer to Table D-4.
Yes	If the system power LED is green, refer to Table D-4.	
Note: For LED locations and functions, refer to Appendix E, "LEDs and Switches."		

Table D-4: Is the Server Blade Internal Health LED Solid Green?

Answer	Possible Reasons	Possible Solutions
No, it is amber.	A processor is in pre-failure condition. A DIMM is in pre-failure condition. One memory bank is valid, but another bank is missing a DIMM. One memory bank is valid, but another bank has mismatched DIMMs installed. One memory bank is valid, but another bank has an unsupported DIMM type installed.	Do the following: 1. Remove the server blade from the enclosure. 2. With the system powered down, remove the access panel. 3. Visually inspect the system for damage. 4. Reseat or replace processors and/or DIMMs. 5. Be sure that the proper connections exist among the power converter module, system board, SCSI backplane, and power button/LED board. 6. Reinstall the access panel. 7. Reinstall and power up the server blade. If the health LED is still not solid green, do one of the following: • Use the optional diagnostic station to power the server blade and use the iLO remote console to continue the diagnosis. • Contact a Compaq authorized service provider for replacement parts and service.

continued

Table D-4: Is the Server Blade Internal Health LED Solid Green? *continued*

Answer	Possible Reasons	Possible Solutions
No, it is flashing green.	The server blade is still in POST. If the flashing continues after 1 minute, the following conditions may apply: • Nonvolatile RAM (NVRAM) may be corrupted. • The system ROM may be corrupted. • Both the system ROM and redundant ROM may be corrupted.	Wait for the server blade to complete POST. Clear the system configuration. Refer to the "Clearing the System Configuration" section in this appendix. Switch to the redundant ROM. Refer to the "Accessing the Redundant ROM" section in this appendix. If the health LED is still not solid green, do one of the following: • Use the optional diagnostic station to power the server blade and use the iLO remote console to continue the diagnosis. • Use the iLO system status page to help determine the problem. • Contact a Compaq authorized service provider for replacement parts and service.

continued

Table D-4: Is the Server Blade Internal Health LED Solid Green? *continued*

Answer	Possible Reasons	Possible Solutions
No, it is red	A processor has failed. Processor 1 is not installed. A processor is an unsupported type. Processors are mismatched (speed and/or type). A PPM has failed. A PPM is not installed. A DIMM has experienced a multibit error. The system contains no valid memory. Populated banks have mismatched DIMMs. The system contains no valid memory. Populated banks have missing DIMMs. The system contains no valid memory. Populated banks have unsupported DIMM types. One or both blowers have failed. An overtemperature condition has occurred.	Do the following: 1. Remove the server blade from the enclosure. 2. With the system powered down, remove the access panel. 3. Visually inspect the system for damage. 4. Add or replace processors, PPMs DIMMs, and/or the blowers. 5. Verify the proper connections among the power converter module, system board, SCSI backplane, and power button/LED board. 6. Reinstall and power up the server blade. If the health LED is still not solid green, do one of the following: • Use the optional diagnostic station to power the server blade and use the iLO remote console to continue the diagnosis. • Use the iLO system status page to help determine the problem. • Contact a Compaq authorized service provider for replacement parts and service.
Yes	If the internal health LED is green, refer to Table D-5.	

Note: For LED locations and functions, refer to Appendix E, "LEDs and Switches." For cabling configurations, refer to the cabling and powering up section in the *ProLiant BL p-Class System Setup and Installation Guide*.

Table D-5: Is the iLO Remote Console Capable of Displaying Error Information?

Answer	Solution
No	An iLO problem exists. Refer to the *Compaq Integrated Lights-Out User Guide* that ships with the server blade.
Yes	Error and event logs are available for diagnosis. Determine the next action by observing POST progress and error messages. Use the iLO system status page to help determine the problem. Refer to Appendix C, "Server Error Messages," and the *Compaq Servers Troubleshooting Guide* for a complete description of POST error messages.

System Configuration Switch Procedures

When you perform troubleshooting steps, this guide may instruct you to perform the following procedures:

- Clear the system configuration.
- Access the redundant ROM.

IMPORTANT: Do not perform these procedures until directed to do so by the troubleshooting tables in this appendix.

To complete these procedures, you must change physical settings on the system configuration switch (SW1). For switch locations and positions, refer to Appendix E, "LEDs and Switches."

Clearing the System Configuration

To clear the system configuration:

1. Power down the server blade:
   a. Press the Power On/Standby button on the front of the server blade.
   b. Use the virtual power button feature in the iLO remote console.
2. Disconnect the server blade from all power sources:
   a. Remove the server blade from the enclosure and set it on a flat, level surface.
   b. Disconnect the server blade from the diagnostic station.
3. Remove the access panel. Refer to the "Accessing Internal Server Blade Components" section in Chapter 2, "Installing the Server Blade and Options."
4. Change position 4 of SW1 to on.
5. Install the access panel. Refer to the "Installing the Access Panel" section in Chapter 2, "Installing the Server Blade and Options."
6. Connect the server blade to system power:
   a. Install the server blade in the enclosure.
   b. Connect the server blade to the diagnostic station.
7. Power up the server blade:
   a. Press the Power On/Standby button on the front of the server blade.
   b. Use the virtual power button feature in the iLO remote console.
8. Wait for the POST message that prompts you to change the switch setting:

   ```
   Maintenance switch detected in the "On" position.
   Power off the server and turn switch to the "Off" position.
   ```

9. Repeat steps 1 through 3.

10. Change position 4 of SW1 to off.
11. Repeat steps 5 through 7.

IMPORTANT: When the server blade boots after NVRAM is cleared, a delay of up to 2 minutes is normal. During this delay, the system appears non-functional. Do not attempt any procedures during the delay.

Accessing the Redundant ROM

If the system ROM is corrupted, you can set the system to use the backup version or redundant ROM.

To use the redundant ROM:

1. Power down the server blade:
   a. Press the Power On/Standby button on the front of the server blade.
   b. Use tbe virtual power button feature in the iLO remote console.
2. Disconnect the server blade from all power sources:
   a. Remove the server blade from the enclosure and set it on a flat, level surface.
   b. Disconnect the server blade from the diagnostic station.
3. Remove the access panel. Refer to the "Accessing Internal Server Blade Components" section in Cbapter 2, "Installing the Server Blade and Options."
4. Change positions 1 and 4 of SW1 to on.
5. Install the access panel. Refer to the "Installing the Access Panel" section in Chapter 2, "Installing the Server Blade and Options."
6. Connect the server blade to system power:
   a. Install the server blade in the enclosure.
   b. Connect the server blade to the diagnostic station.
7. Power up the server blade:
   a. Press the Power On/Standby button on the front of the server blade.
   b. Use the virtual power button feature in the iLO remote console.

8. As soon as the server blade powers up, it emits two beeps.
9. Repeat steps 1 through 3.
10. Change positions 1 and 4 of SW1 to off.
11. Repeat steps 5 through 7.

If both the current and backup versions of the ROM are corrupt, you must return the system board for a service replacement. Refer to the *Compaq ProLiant BL p-Class System Maintenance and Service Guide* and contact a Compaq authorized reseller.

Problems After Initial Boot

Once the server blade has passed POST, you may still encounter errors, such as an inability to load the operating system. Reinstall the operating system and use the documentation that ships on the Compaq Rapid Deployment Pack CD or refer to the *Compaq Servers Troubleshooting Guide* for more information.

The troubleshooting guide identifies the information you need to collect when diagnosing software problems and when contacting support. The guide also provides instructions on how to upgrade the operating system and its drivers; information about available recovery options; and advice on minimizing downtime.

E

LEDs and Switches

LEDs

The system contains several sets of LEDs that indicate the status and settings of hardware components. Use the following sections to determine the location and functions of LEDs on these components:

- ProLiant BL20p server blade front panel
- Hot-plug SCSI hard drive

Server Blade Front Panel

Six LEDs on the front of the server blade indicate server status. Use Figure E-1 and Table E-1 to identify LED locations and functions.

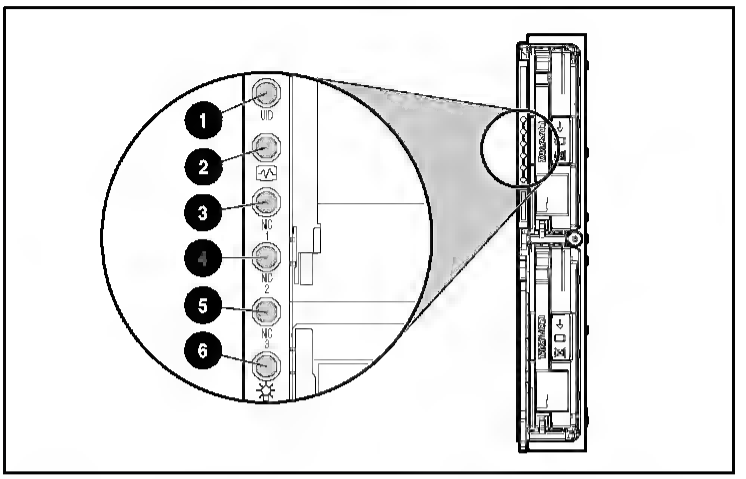


Figure E-1: ProLiant BL20p server blade front panel LEDs

Table E-1: ProLiant BL20p Server Blade Front Panel LEDs

Item	LED Description	Status
1	Unit identification	Blue = Flagged
	(UID)	Blue flashing = Engaged in management function*
		Off = Not engaged in management function
2	Health	Green = Normal status
		Flashing = Booting
		Amber = Degraded status
		Red = Critical status

* Server blade is engaged in a non-interruptible iLO function.

continued

Table E-1: ProLiant BL20p Server Blade Front Panel LEDs *continued*

Item	LED Description	Status
3	NIC 1	Green = Linked to network
4	NIC 2	Green flashing = Network activity
5	NIC 3	Off = No activity
6	Power On/Standby	Green = On
		Amber = Standby (power available)
		Off = Unit off

Hot-Plug SCSI Hard Drive

Each hot-plug SCSI hard drive has three LEDs located on the front of the drive. The LEDs provide activity, online, and fault status for each corresponding drive when configured as a part of an array and attached to a powered-on Smart Array controller. Their behavior may vary depending on the status of other drives in the array. Use Figure E-2 and Table E-2 to identify LED locations and functions.

WARNING: Before removing a hard drive, read the guidelines on hot-plug hard drive replacement in the *Compaq Servers Troubleshooting Guide*.

- The first LED indicates drive activity status (1), where on indicates activity and off indicates no activity by the drive.
- The second LED indicates online status (2), where flashing indicates an active online condition and off indicates an inactive online condition.
- The third LED indicates fault status (3), where flashing indicates fault-process activity and off indicates a no-fault-process activity.

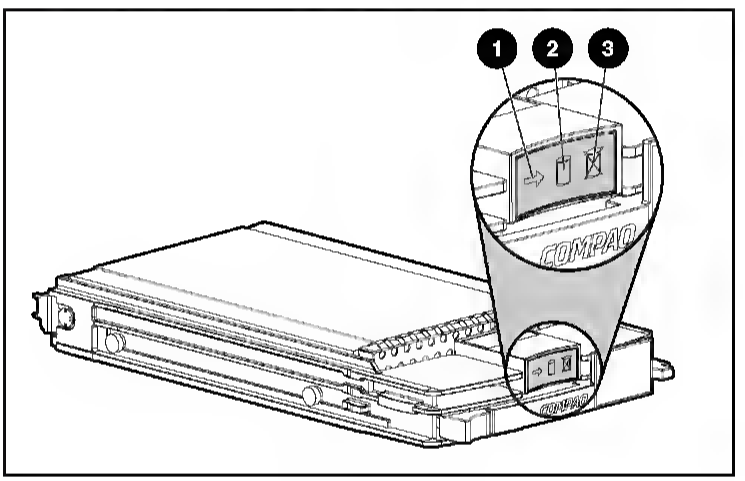


Figure E-2: Hot-plug SCSI hard drive LEDs

Table E-2: Hot-Plug SCSI Hard Drive LED Status Combinations

(1) Activity	(2) Online	(3) Fault	Means
On	Off	Off	**Do not remove the drive. Removing a drive during this process causes data loss.** The drive is being accessed and is not configured as part of an array.
On	Flashing	Off	**Do not remove the drive. Removing a drive during this process causes data loss.** The drive is rebuilding or undergoing capacity expansion.
Flashing	Flashing	Flashing	**Do not remove the drive. Removing a drive during this process causes data loss.** The drive is part of an array being selected by the Array Configuration Utility. -Or- The Options ROMPaq is upgrading the drive.
Off	Off	Off	OK to replace the drive online if a predictive failure alert is received and the drive is attached to an array controller. The drive is not configured as part of an array. -Or- If this drive is part of an array, a powered-on controller is not accessing the drive. -Or- The drive is configured as an online spare.
Off	Off	On	OK to replace the drive online. The drive has failed and has been placed offline.

continued

Table E-2: Hot-Plug SCSI Hard Drive LED Status Combinations *continued*

(1) Activity	(2) Online	(3) Fault	Means
Off	On	Off	OK to replace the drive online if a predictive failure alert is received, provided that the array is configured for fault tolerance and all other drives in the array are online. The drive is online and configured as part of an array.
On or flashing	On	Off	OK to replace the drive online if a predictive failure alert is received, provided that the array is configured for fault tolerance and all other drives in the array are online. The drive is online and being accessed.

Power On/Standby Button

Setting the server blade Power On/Standby button to the standby position removes power from most areas of the server blade. This process may take 30 seconds, during which time some internal circuitry remains active.

IMPORTANT: To remove power completely, remove the server blade from the server blade enclosure.

Use Figure E-3 to identify the button location.

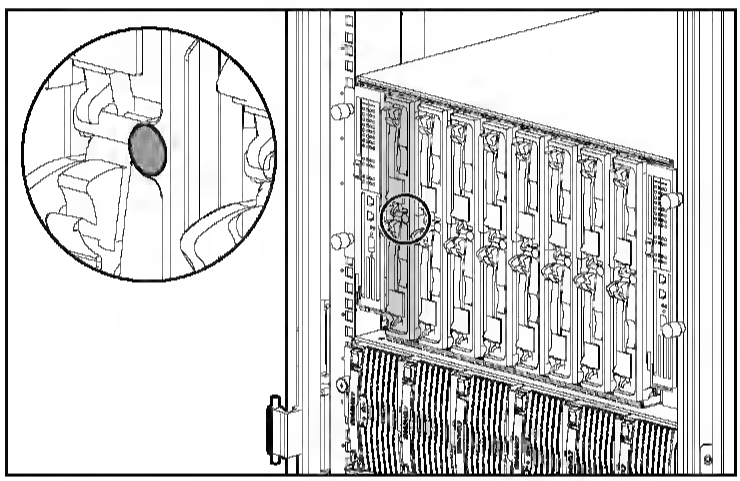


Figure E-3: Power On/Standby button

System Switches

System switches enable you to change certain settings or to perform advanced diagnostic procedures. Use Figure E-4 and Table E-3 to identify switch locations and functions.

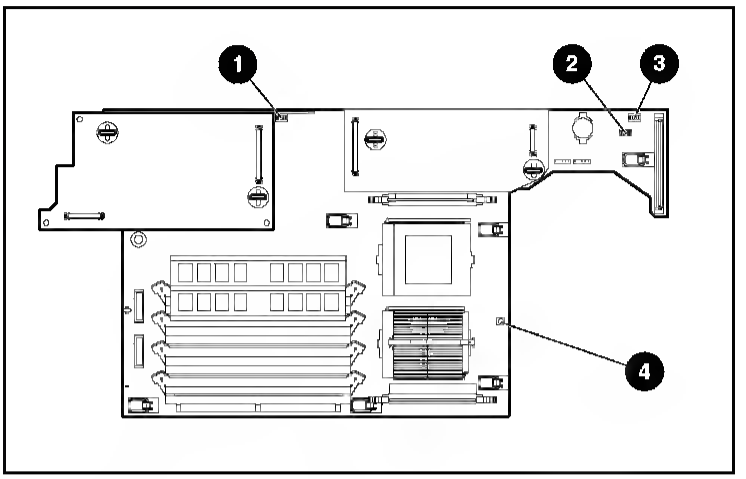


Figure E-4: Server blade system switches

Table E-3: Server Blade System Switches

Item	Description
1	iLO switch (SW2)
2	System switch (SW3)
3	System configuration switch (SW1)
4	Non-maskable interrupt (NMI) switch

iLO Switch (SW2)

The iLO switch is a four-position switch that grants you access to perform a boot block flash of system ROM and iLO ROM. For the proper system configuration switch settings, refer to Table E-4 or refer to the labels attached to the inside of the server access panel.

Table E-4: iLO Switch (SW2) Settings

Position	Description	On/Off Function
1	Reserved	—
2	ILO security override	Off = iLO security is enabled; iLO access requires a valid user ID and password. Also, the iLO boot block access is disabled and the iLO boot block cannot be flashed. On = iLO security is disabled; iLO access is possible without a valid user ID or password. Also, the iLO boot block access is enabled and the iLO boot block can be flashed.
3	Reserved	—
4	Reserved	—

System Switch (SW3)

The function for this switch is reserved.

CAUTION: Do not change any SW3 settings or the system may not function properly.

System Configuration Switch (SW1)

The system configuration switch is a four-position switch that enables access to server hardware settings. The default setting for all four positions is off. For the proper system configuration switch settings, refer to Table E-5 or refer to the labels attached to the inside of the server access panel.

Table E-5: System Configuration Switch (SW1) Settings

Position	Description	On/Off Function
1	Reserved	—
2	Configuration lock	Off = System configuration can be modified. On = System configuration is locked and cannot be modified.
3	Password clear	Off = Power-on password is enabled. On = Power-on password is disabled.
4	Invalidate configuration	Off = No function On = ROM treats the system configuration as invalid.

NMI Switch

The non-maskable interrupt (NMI) switch is for use by trained service personnel only. Refer to the *Compaq ProLiant BL p-Class System Maintenance and Service Guide*.

F

Specifications

ProLiant BL20p Server Blade

Table F-1: Operating and Performance Specifications for ProLiant BL20p Server Blade

Dimensions		
Width	28.14 cm	(10.29 in)
Depth	71.12 cm	(28.00 in)
Height	4.29 cm	(1.69 in)
Weight (maximum)	8.17 kg	(18.0 lb)
Temperature range[1]		
Operating	10° to 35°C	(50° to 95°F)
Non-operating:		
Shipping	-40° to 80°C	(-40° to 140°F)
Storage	-20° to 80°C	(-4° to 140°F)

[1] Operating temperature has an altitude derating of 1°C per 304.8 m (1,000 ft). No direct sunlight. Upper operating limit is 3,048 m (10,000 ft) or 70 Kpa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft) or 30.3 KPa/4.4 psia.

continued

Table F-1: Operating and Performance Specifications for ProLiant BL20p Server Blade *continued*

Relative humidity (noncondensing)[2]		
Operating	10% to 90%	
Non-operating:		
Shipping	10% to 90%	
Storage	10% to 95%	
Maximum wet bulb temperature	28°C	(82°F)

[2] Storage maximum humidity of 95% is based on a maximum temperature of 45°C. Altitude maximum for storage is 70 KPa.

G

System Battery

System Board Battery Replacement

When the server blade no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock. Under normal use, battery life is usually about 5 to 10 years. Use a Compaq 540-mAh, lithium, 3-V replacement battery (spare P/N 234556-001).

To install a new battery:

1. Access the internal server blade components. Refer to the "Preparation Procedures" section in Chapter 2, "Installing the Server Blade and Options."

2. Locate the battery holder on the system board.

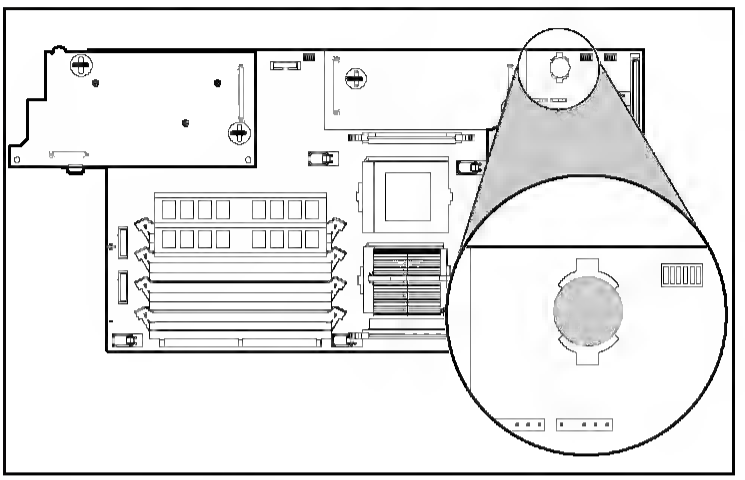


Figure G-1: Battery holder

WARNING: For proper battery disposal, refer to the "Battery Replacement Notice" section in Appendix A, "Regulatory Compliance Notices."

3. Remove the existing battery:
   a. Press the locking tab (1).
   b. Lift the battery away from the battery holder (2).

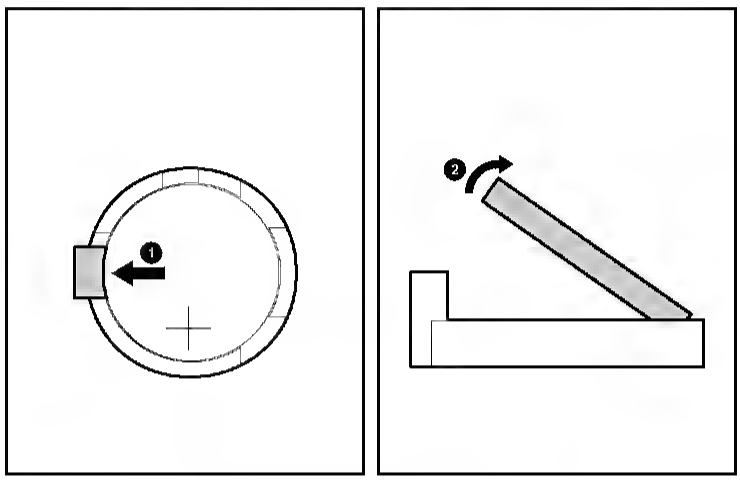


Figure G-2: Removing the existing battery

4. Install the new battery.

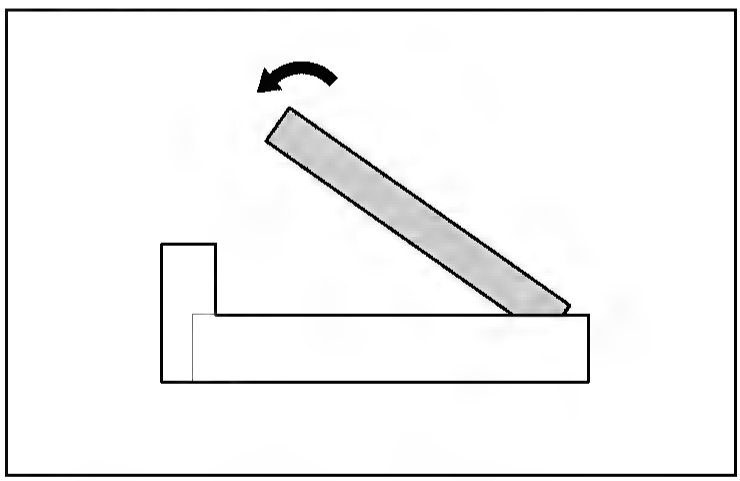


Figure G-3: Installing the new battery

5. Install the access panel. Refer to the "Installing the Access Panel" section in Chapter 2, "Installing the Server Blade and Options."
6. Install the server blade in the server blade enclosure. Refer to the "Installing a Server Blade" section in Chapter 2, "Installing the Server Blade and Options."
7. Power up the server blade. Refer to the "Powering Up the Server Blade" section in Chapter 2, "Installing the Server Blade and Options."
8. Run RBSU to reconfigure the system with the new battery. Refer to the "ROM-Based Setup Utility" section in Chapter 3, "Configuring and Deploying Server Blades."

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